

The Lies of Unleaded Petrol

Highly toxic chemicals are replacing the lead in our fuel, yet government authorities continue to underestimate the serious risks to public health.

Part 2

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NEXUS Magazine
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THE COMPOSITION OF PETROL

Last issue we discussed how there was little evidence to support the claim that the octane-raising substances in unleaded petrol are safer than the lead compound used. In fact, there was little or no evidence to support the claim that lead in petrol has any effect on the levels of lead in the blood. Unleaded technology means something else is added to the petrol to maintain its octane number. What has not been made very clear is that since about 1970 the lead content in leaded petrol has been reduced. Policy has meant that, over time, lower and lower maximum lead levels have been set.

There are three main groups of substances the oil companies use instead of lead.

1. Aromatics—organic compounds based on the benzene ring, a 6-carbon ring with 3 delocalised double bonds, e.g., benzene, toluene, xylene, etc.
2. Olefines—organic compounds which have double bonds. After combustion, one critical by-product is 1,3-butadiene.
3. Oxygenates—organic compounds containing oxygen molecules such as methane, ethane or MTBE (methyl-tertiary-butyl ether).

The US Environmental Protection Agency has targeted five toxic air pollutants—benzene and 1,3-butadiene are the top two on the list. They are both highly carcinogenic substances. 1,3-butadiene has only just come to international attention.¹

Therefore, there is one very important question to ask. What is the present composition of leaded, regular unleaded, and premium unleaded fuel?

In Australia, oil companies do not have to release the exact formulas for making up the petrol mixtures. In Britain it is the same as in Australia: the oil companies provide almost no information about the chemical content of lead. In the US, oil companies have to release the petrol formulae to the US EPA. I managed to find an independent study, done by Dr Michael Dawson and Mr Noel Child of the University of Technology, Sydney, which analysed the composition of many petrol samples from all over Australia.² They also compiled a table of petrol compositions from many other countries (see Tables 1, 2 and 3). These figures came from the "International Gasoline Survey, 1994", a report published annually by Associated Octel Company.

Using the figures for Australia as an example, in regular unleaded petrol, the total aromatic content was 27.7%, and benzene level at 2.0% (Table 2). But, for leaded petrol, the total aromatic content was 29.2%, and the benzene level at 2.1% (Table 3). Wow! This means the total aromatic content and the benzene levels are very similar—actually, marginally higher in leaded petrol. If you look at all the other countries in the tables, the percentage content of benzene and total aromatics in leaded and regular unleaded petrol is also very similar.

Standard unleaded petrol has a lower octane number of around 91, whereas leaded petrol has an octane number of 96 or higher. The lead compound added is just enough to increase the octane number from around 91 to over 96. Premium unleaded has an octane number of 96, so it has much higher levels of aromatics—as well as benzene—than other fuels. For premium unleaded petrol in Australia, the total aromatic content was 36.4%, with benzene level of 3.3% (Table 1).

This analysis of Australian petrol was conducted before 1st January 1995. At this time, maximum lead levels were at 0.3 grams per litre. After 1st January 1995, the maximum lead levels were reduced to 0.2 g/litre, which means that more of these alternative additives—the aromatics, including benzene, and/or olefines—have been used. So, leaded petrol today could have even more alternative additives than regular unleaded petrol.³

Table 1: Premium Unleaded Gasolines—An International Comparison (N. G. Child/Dr M. Dawson, 30/3/95)

COUNTRY	SAMPLE DATE	GRADE	RON *	SATURATES (%v/v)	OLEFINS (%v/v)	AROMATICS (%v/v)	OXYGENATE (%v/v)	BENZENE (%v/v)
USA	Winter 93/94	Premium	97.6	58.4	7.4	29	5.3	1.1
GREAT BRITAIN	June 1994	Super	98.3	52.4	7.3	38.4	2.1	2.5
GREAT BRITAIN	June 1994	Premium	96.3	59.1	9.3	30.2	1.3	2
SINGAPORE	Late 1992	Premium	97.9	47.6	2.3	43.7	6.4	3.5
AUSTRALIA	Oct/Dec 1994	Premium	95.9	55.6	7.9	36.4	0.0	3.3
ITALY	January 1993	Premium	96.4	58.2	10.7	31.1	4.1	1.6
NETHERLANDS	January 1993	Premium	98.4	59.2	2.9	37.9	6.6	1.7
FRANCE	January 1993	Premium	98.7	50.1	6.5	43.4	2.7	2.6
GERMANY	January 1993	Premium	96.5	52.6	7.7	39.7	2.0	2.3
NORDIC	January 1993	Premium	96.0	55.8	7.3	36.9	4.6	2.7
SPAIN	January 1993	Premium	96.1	47.6	13.6	38.8	5.6	1.7
MID-EUROPE	January 1993	Premium	95.4	55.4	6.9	37.7	4.4	1.8

AIR POLLUTION

Dr Michael Dawson explains that when the oil companies removed lead from US gasoline in the 1980s, the increased aromatic content had two deleterious effects:

"Firstly, air pollution became worse because aromatic compounds are very photochemically active. Secondly, tailpipe emissions of the carcinogen benzene increased."⁶

Dr Michael Dawson says that "Eventually, the lead content in leaded petrol will be reduced to almost nil" in Australia, "and we will have cars not fitted with catalytic converters spewing out tons more air toxics each year than is currently the case."³

The third group of alternative octane-raising substances mentioned above are the oxygenates. A major by-product of their combustion is acid aldehyde—the first substance the body produces in the alcohol-detoxifying process.¹⁴ So it seems that the oxygenates are less toxic than benzene and 1,3-butadiene.

Another advantage of oxygenates is that, because they contain oxygen molecules, they cause the fuel to burn more efficiently—and thus lowering the levels of all pollutants from car emissions.⁴

Oil companies in Australia don't use these oxygenates because they are not by-products of petroleum production and would have to be purchased from other chemical companies, thus making them more expensive.¹

The US EPA mandated that from 1st January this year, a "reformulated gasoline" is to be sold in approximately 25% of the USA.⁵ A limit of 1% of benzene (10% of total aromatic content) is set for this fuel. EPA sources predict that market share for reformulated gasoline will eventually be 70%.¹

The oxygenate MTBE is one of the substances of concern, mentioned in the article extract from Dr Hans Nieper which follows on page 29. (Note: Australia is the only country listed in the tables whose petrol contains no MTBE.)

Taking this into consideration, ethanol and methanol may be the safest additives—or should catalytic converters be phased out of use? Definitely, many more studies have to be done on the exact effects of these chemicals.

BENZENE IN THE ATMOSPHERE

The carcinogen benzene is an inexpensive substitute for lead. As an example, in Germany in 1993, 32 million tons of fuel were burnt. Around 10 million tons of aromatics were in this fuel—and at least three-quarters-of-a-million tons would have been benzene. A significant amount of this fuel finds its way into the atmosphere as benzene.⁷

In 1991 in Germany, about 100,000 tons of fuel escaped during transport from refinery to filling station; 45,000 tons escaped while gasoline was being pumped into gas tanks, and another 33,000 tons escaped from car motors.⁷

Dr Michael Dawson has taken benzene readings in Sydney over an entire month in summer and an entire month in winter. The measurements revealed average benzene levels of 4.1 parts per billion in summer, and 7.6 p.p.b. in winter. Peak concentrations reached between 12 and 25 p.p.b. respectively. These readings were taken at the same place in the city where carbon monoxide levels are monitored by the EPA.^{2,8}

Britain has recently adopted a maximum of 5 p.p.b. of benzene and has a national target to decrease levels below 1 p.p.b.

Dr Michael Dawson says, "Australia has no safe standard for benzene, and its environmental authorities do not carry out regular monitoring."⁸

The Victorian EPA conducted a study in 1992-93 which found benzene levels in Melbourne's inner suburbs of up to 6 p.p.b. This agency sets a preferred limit equal to about 30 p.p.b. They quote studies which show that over 75% of benzene in the air of industrialised cities comes from vehicle emissions.⁹

Tests of benzene levels in Baden-Württemberg, Germany, measured statewide average values of between 6 and 46 micrograms of benzene per cubic metre (approx. 2 to 15 p.p.b.). Traffic in Stuttgart produced monthly peak values of up to 62 micrograms (approx. 21 p.p.b.). The Swabian Environment Minister, Harold Schäfer commented that the levels were "Frightening, ...indeed, dramatically high."⁷

Table 2: Regular Unleaded Gasolines—An International Comparison (N. G. Child/Dr M. Dawson, 30/3/95)

COUNTRY	SAMPLE DATE	GRADE	RON *	SATURATES (%v/v)	OLEFINS (%v/v)	AROMATICS (%v/v)	OXYGENATE (%v/v)	BENZENE (%v/v)
USA	Winter 93/94	Regular	92.1	58.7	12.9	24.4	4.1 (MTBE)	1.10
USA	Winter 93/94	Intermediate	94.2	58.3	11.3	26.1	4.5 (MTBE)	1.11
GREAT BRITAIN								
SINGAPORE								
AUSTRALIA	Oct/Dec 1994	Regular	91.5	59.6	12.7	27.7	0.0 (MTBE)	2.0
ITALY								
NETHERLANDS								
FRANCE								
GERMANY	January 1993	Regular	92.7	58.6	12.0	29.5	1.3 (MTBE)	1.6
NORDIC								
SPAIN								
MID-EUROPE								

Harald Notter, spokesman for the environment minister, aware that the Baden-Württemberg case is unique in Germany, says, "Most of the German states approach the benzene issue with great caution, afraid of the costs and perhaps also of the results."⁷

In Britain in 1994, a cross-party group of MPs called on the government to ban sales of super unleaded petrol. The recommendation was one of many aimed at reducing air pollution.

The MPs said that evidence "strongly suggests that the potential health hazards resulting from the excessive aromatics used...outweigh any possible benefits from the reduced lead." They would also like the composition of petrol to be publicised so that people can judge for themselves the environmental effects of different types of fuels.^{10,11}

In Switzerland, it is now compulsory for every petrol pump to be fitted with a negative-pressure vapour hood. This is a device that pumps all the air that is displaced by the petrol, into a holding tank. Therefore, the fumes do not escape into the atmosphere, and a little petrol actually recondenses in the holding tank.

They also use this method in some parts of the US, but there are no plans to use these in Britain or Australia.

HEALTH EFFECTS OF AROMATICS, ESPECIALLY BENZENE

Dr Arthur Chesterfield-Evans, an occupational health expert, believes the public had been misled by claims that by removing the lead from petrol, its negative environmental and health effects have been reduced. He says, "We have been subject to a concentrated disinformation campaign in the form of a seductively simple 'no lead, no worries' message."⁸

The US EPA claims that half of all cancer cases may be related to air pollution.⁹ For a lifelong exposure to a microgram of benzene per cubic metre (approx. 1 part per billion), it estimates that 2.8 people per million will be diagnosed with leukaemia. The World Health Organisation comes up with a figure of four leukaemia cases per million, and the German Cancer Research Centre with nine projected cases.⁷

Professor Cesare Maltoni, of Italy's Ramazzini Foundation for Oncology and Environmental Science, has directed studies showing that cancer is linked to substances from vehicle emissions. For 25 years his Foundation has tested on animals scores of substances found in vehicle emissions.

In 1977, Prof. Maltoni's Foundation showed that benzene was a powerful carcinogen causing many types of cancers, particularly leukaemia. Many other aromatics were tested and they all proved to be carcinogenic. Several other compounds contained in vehicle emissions were also found to be carcinogenic.

Professor Maltoni said, "There are risks with gasoline containing high aromatic hydrocarbons, risks with US gasoline containing high paraffin content, and risks with oxygenate-additive gasolines. Particular concern must be attached to gasolines with a high aromatic hydrocarbon content. Benzene is one of the most powerful industrial carcinogens. Alkyl benzenes likewise entail cancer risk."¹²

Many alkyl benzenes break down to benzene in the combustion process. Dr Michael Dawson says that approximately 50% of the benzene emitted from the exhaust comes from the actual benzene in the fuel, 40% is from the toluene (methyl benzene), and 10% from other aromatics in the fuel.¹

Dr Simon Wolff, of University College London School of Medicine, was originally concerned about Britain's nuclear power-plants. He noticed a tenfold difference in childhood leukaemia rates between certain populations, so he began searching for explanations. He concluded that newer middle-class suburbs and towns with high levels of car ownership and use were the most at risk.

Dr Wolff says that Britain's plan to cut benzene levels to one p.p.b. is still not enough. "We should be aiming to lower the lifetime risk of leukaemia to one in a million, compared with 10,000 at present. To achieve that we have to cut benzene levels by fifty- or one-hundredfold."¹² Children could develop cancer at much lower benzene exposure levels than adults, because they breathe faster, have much faster metabolism, and their bone marrow is more sensitive.

Studies from Sweden have found unexpectedly high levels of leukaemia in petrol-station workers.¹²

Dr Michael Dawson asks, "Why are oil companies allowed to substitute a carcinogen (or compounds which are converted to a

Table 3: Premium Leaded Gasolines—An International Comparison (N. G. Child/Dr M. Dawson, 30/3/95)

COUNTRY	SAMPLE DATE	GRADE	RON *	LEAD (gPb/L)	SATURATES (%v/v)	OLEFINS (%v/v)	AROMATICS (%v/v)	OXYGENATE (%v/v)	BENZENE (%v/v)
USA	Winter 93/94	Leaded	94.4	n/a	57.2	11.0	22.8	9.0 (MTBE)	1.1
GREAT BRITAIN	June 1994	Premium Leaded	97.7	0.126	59.7	13.8	25.7	0.7 (MTBE) 0.1 (TAME)	1.7
NEW ZEALAND	1992/93	Leaded	97.6	0.32	66.6	0.8	32.6	not available	3.2
AUSTRALIA	Oct/Dec 1994	Leaded	96.4	0.216	58.4	12.4	29.2	0.0 (MTBE)	2.1
ITALY	January 1993	Premium	98.0	0.13	58.4	9.7	31.9	2.2 (MTBE)	1.9
NETHERLANDS	January 1993	Premium	98.3	0.14	56.2	5.4	38.4	0.7 (MTBE)	2.4
FRANCE	January 1993	Premium	97.8	0.14	50.5	17.0	32.5	0.7 (MTBE)	1.7
GERMANY	January 1993	Premium	99.2	0.13	54.2	5.8	40.0	2.3 (MTBE)	2.3
NORDIC	January 1993	Premium	99.3	0.06	53.5	4.4	42.2	6.5 (MTBE)	2.9
SPAIN	January 1993	Premium	98.3	0.12	49.4	14.1	36.5	4.3 (MTBE)	1.9
MID-EUROPE	January 1993	Premium	96.9	0.13	60.4	6.8	32.8	2.8 (MTBE)	1.6

carcinogen) for a neurotoxin?"¹⁶ The carcinogen is released into the air we breathe, while the neurotoxin it replaces comes out of the exhaust as lead oxide or lead chloride which is baked hard and falls to the ground near the road.¹

Professor Roger Perry says, "I find it really difficult to understand how any government or any serious scientist could take the issues of low levels of lead seriously, and decide to ignore issues such as benzene where levels are already high enough for concern."⁹

Professor Bill McCarthy, head of the Sydney Melanoma Unit, Royal Prince Alfred Hospital, Sydney, says: "Benzene is a highly carcinogenic agent. It causes lung tumours, liver tumours, renal tumours, kidney tumours, leukaemia and skin tumours."¹³

The worrying thing is that whether someone gets cancer from exposure to chemicals is an individual thing; it all depends on tolerance levels. People can take on a certain load of toxins, then all of a sudden a bit more will make them really sick.¹³ For example, people afflicted with Chronic Fatigue Syndrome may feel good one day, but the next day they can't get out of bed.

If you recall, in NEXUS vol.2#23 we published an article by Dr Hulda Regehr Clark, suggesting a link between the solvent benzene and HIV/AIDS—so the implications are of great concern.

HEALTH HAZARDS OF AVIATION FUEL

Aviation fuel contains aromatics including benzene. Michael Dawson, Brent Young and Noel Child have presented a report to a Commonwealth Government Senate Committee on Air Traffic Noise in Sydney. They suggest that with an already high base-concentration of benzene and other pollutants from car emissions, the extra pollutants—especially benzene from air traffic—put people under the flight path at extra-high risk. Their report contains data showing quite high monthly average benzene levels—up to 10.6—under the flight paths from Manchester airport. They say it is "located in an essentially rural environment, and these benzene concentrations can be reasonably assumed to result almost entirely from aircraft rather than motor vehicle emissions."¹⁸

WHICH FUEL TO USE?

In Australia, there is a campaign to encourage owners of pre-1986 leaded petrol-run vehicles to use unleaded petrol.^{5,16}

My research shows there is little difference in the aromatic levels—so, on that account, it should make no difference which you use. You'd swap a little lead for 5 or 6 points of octane number.

With pre-1986 cars, if you do use ULP, the lack of lead will cause the bores to wear out more quickly. Unless you have hardened valve seats, they will slowly settle into the head (but, in any case, the valve seats in today's vehicles are not always hardened).¹

However, I would definitely not recommend using premium unleaded fuel because of its much higher aromatic content.

The question remains to be asked: "Why are catalytic converters so important to have fitted on cars designed for unleaded petrol, when the leaded fuel we still buy for cars without catalytic converters contains the same composition of aromatics?"

In New Zealand the situation is different. ULP technology has been introduced without any cars being fitted with catalytic converters.^{1,17}

(By the way, Associated Octel is the company that makes the lead compound used in petrol.⁴ The petroleum cartels once owned Associated Octel, and all but sold it off after the introduction of unleaded technology—so any reintroduction of lead would not be in their interests.)

CATALYTIC CONVERTER CHAOS

In theory, a catalytic converter is supposed to convert 90% of the unburnt part of the fuel and turn it into a safer substance.⁴ But in practice, as mentioned in the last issue, they take 10-15 minutes to warm up before they work, and they cease to work after 40,000 to 50,000 kilometres. So, much of the time, they'd definitely not be doing what they're supposed to be doing.

"They supposedly fall off" in efficiency, "but there's been no work done in this country on it," says Ron Castaldi of the Australian Institute of Petroleum.⁹

In 1994, the Australian Committee on Vehicle Emissions and Noise (ACVEN) started a survey to check emissions from 600 cars nationwide. "Benzene is not one of the controlled emissions," says Project Director Peter Anyon of the Federal Office of Road Safety.⁸

Professor Roger Perry, Professor of Environmental Control and Waste Management at London's Imperial College of Science, Technology and Medicine, asks, "Do you remove 95% of hydrocarbons when the catalyst is new, and then 60% in three years' time? Does the 60% mean the easy ones, and the difficult ones are not being removed? No one can answer that. Benzene is a stable aromatic material; the odds are that it would be one of the last to be oxidised. The more inefficient the catalytic converter becomes, the more benzene would get through the system."⁹

Noel Child says it's actually very similar technology to the

process used in oil refineries to make benzene from straight chain molecules: it all depends on the operating conditions.⁴ The manufacturers fit the converter, and away goes the car—but what's really going on there is a mystery.

Hydrogen sulphide (rotten-egg gas) emissions can also regularly be detected from cars with catalytic converters. According to Noel Child, the gas tends to be emitted from newer vehicles. H₂S is a highly toxic substance able to attach itself to haemoglobin and thus block oxygen absorption.⁴

The extract commencing on page 29 is by Dr Hans Nieper of Hannover, Germany, who has made some very interesting discoveries about what actually goes on inside catalytic converters.¹⁹

CONCLUSION

One thing that's very apparent is that vested interests want to withhold this information from the public. Aromatics are the least expensive of the octane-number increasing fuel additives. Having catalytic converters on cars makes many people believe that most of the toxic fumes have been greatly reduced.

But, for sure, there is now greatly increased interest in this subject. For example, the Royal College of Physicians, London, is having an International Air Toxics Conference in November this year. At least two presentations will be from Australia, with Noel Child presenting a paper titled, "In Search of a Green Gasoline". Dr Michael Dawson and Noel Child will also be presenting their research into benzene levels.

Footnotes:

1. C. Simons telephone conversation with Dr Michael Dawson, Department of Chemistry, University of Technology, Sydney, Australia, May 1995.
 2. Dr Michael Dawson and Noel Child, "Study of Benzene Levels in Sydney", University of Technology, Sydney, Australia, published August 1994.
 3. Dr Michael Dawson, "Benzene, the Devil Around the Corner", letter published in *The Australian*, 28 September 1994.
 4. C. Simons telephone conversations with Noel Child (Ph.D. pending), consulting engineer and lecturer in Environmental Engineering at UTS, May 1995.
 5. Dr Michael Dawson, "Not Overlooking US Experience", *The Australian*, 19 September 1994.
 6. Dr Michael Dawson, "No Simple Solution to Lead-Free Petrol", *The Daily Telegraph-Mirror*, 10 November 1994.
 7. In-House Staff, "Hushed-up Dangers", *Explore!*, vol. 5, nos. 5 and 6, 1994.
 8. Julian Cribb, "Cancer Chemical Detected in Air", *The Australian*, 12 August 1994.
 9. Simon Grose, "Choose Your Poison", *The Canberra Times*, 26 March 1994.
 10. "Ban Urged on Super Unleaded Fuel", *The Guardian Weekly* [UK], 6 November 1994.
 11. "No Turning Back to Leaded Petrol, Say MPs", *New Scientist*, 29 April 1995.
 12. Julian Cribb, "Scientists Debate Carcinogenic Risk of Cars", *The Weekend Australian*, 13-14 August 1994.
 13. Darcy Maddock, "Leaded Versus Unleaded Petrols", *Australasian Health and Healing*, November 1994-January 1995.
 14. C. Simons telephone conversation with Prof. Bill McCarthy, Executive Director, The Sydney Melanoma Unit, Royal Prince Alfred Hospital, Sydney, Australia, May 1995.
 15. Hulda Regehr Clark, Ph.D., N.D., *The Cure For HIV and Aids: With 70 Case Histories*, ProMotion Publishing, San Diego, California, USA, 1993.
 16. Jack Haley, Manager, Vehicles and Environment, NRMA, letter published in *Australasian Health and Healing*, vol. 14, no. 2, February-April 1995.
 17. "One Petrol Problem Swapped For Another: Expert", *Wheels Weekly* [New Zealand], 11 November 1994.
 18. Dr Michael Dawson, Brent Young and Noel Child, "Air Quality Considerations, Kingsford Smith Airport", University of Technology, Sydney, Australia, May 1995.
 19. Dr Hans Nieper, "Nerve Gas from Cars with Catalytic Converters", letter published in *Townsend Letter for Doctors*, December 1994.
- [* Note ref. Tables 1, 2, 3: RON = Research Octane Number.]

NERVE GAS FROM CARS WITH CATALYTIC CONVERTERS

by Dr Hans A. Nieper

Some of you may have read the latest edition of "Steuerbegünstigter Lungenkrebs" [approx. translation, "Tax-Privileged Lung Cancer"], the 100-page documentation concerning the dreadful problems associated with platinum catalysts in the exhaust gas systems of automobiles. Let me refer at this point to this documentation: none of the facts I described in such documentation has had to be revised or withdrawn to date. Car drivers are now being confronted with the indirect economic problems I predicted in this documentation: if the catalytic converter does not meet the [recently introduced] compulsory exhaust gas tests which will occur rather often. Repairs will have to be made which could pose an extreme burden for some families, going as far as compelling them to skip their annual vacation, for example.

I was slandered in a very ugly manner by ADAC [the German automobile club] and by the industry, e.g., by the spokesman of Shell AG, following the interview I gave on ZDF (right after the TV series, *Black Forest Clinic*) in July 1987, because I wanted to make people aware of the problems associated with benzene intoxication through unleaded catalytic converter gas. What has become of this? There is still too much benzene in the 'cat. gas'. This carcinogenic benzene which is easily soluble in fat, has even been detected in candy bars sold at gas stations. After this, I was disparaged because I attributed a potential carcinogenic effect to

toluene, a methyl benzene—large quantities of which are contained in unleaded gas.

I had thought that I had described exhaustively the information an analyses of the 'cat.' problem until 1991, as reported in "Tax-Privileged Lung Cancer". However, the facts we have gathered since April 1991 overshadow even the darkest fears we had previously.

For me, this new development started with a detailed feature by Larry King—broadcast at Easter of 1991 by CNN—which I had the opportunity to watch in Florida. Larry King is number one among all of the highly efficient TV moderators in the US. The subject matter of the discussion was the so-called chronic fatigue syndrome (CFS)—a recently discovered disease in the US. It has also occurred in Japan ("man-killing syndrome"), in large Australian cities (where they drive Japanese cars), and particularly in Switzerland.

The symptoms of CFS are as follows: people become tired and exhausted, even during the day after having slept well the night before. A little over 60% become easily depressed. This depression does not react to the usual antidepressants. Furthermore, various chronic infections occur—in particular, infections of the lymph system, of the urinary passage and the respiratory tract—

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frequently accompanied by lymphoma and chronic tonsil enlargements. For this reason, it is now believed in Germany that CFS has to be a "virus disease". As long as 10 years ago when CFS was first observed in resorts situated at Lake Tahoe, patients showed a dominant infection with herpes viruses or the presence of very high herpes immune titres (IGG herpes titres). Since that time, many publications have been written on the infection problems of CFS patients, which all come to one conclusion: in the case of CFS, all kinds of infections occur in an accumulated manner, in particular through herpes (potentially carcinogenic and causing leukaemia), with cytomegalic viruses (also carcinogenic with respect to the kidneys and other abdominal organs), all kinds of bacterial pathogenic organisms, which are, in part, highly toxic and may lead to life-threatening pneumonia, and, finally, mycosis is frequently detected in CFS patients.

The conclusion from all these observations: In the case of CFS, there is severe general lowered resistance, which is mainly found in the cellular areas, i.e. in the area

of cell membranes. This infectious, unspecific mixed evidence is called "occupational" infection, the main cause of which is lowered resistance.

Based on the extremely good information provided by the Larry King program on CNN, it became evident that CFS is unequivocally connected to the spread of catalytic converters in automobiles.

Shortly after my return from the US in 1991, everything went like clockwork:

1. A leading American platinum metallurgist pointed out to me that a catalyst must produce phosgene whenever chlorides are present in gasoline. This is virtually always the case. Not until 1993 did a fuel-producer provide the information that a certain compound of chlorine was being used as an "additive" in gasoline. Phosgene (COCl₂) is a war gas, used in World War I, with a toxic effect on the lungs.

2. Mr K., who has unfortunately died in the meantime, and who had constant access to all of the new technical developments by Volkswagen at Wolfsburg, came to meet me, showing all signs of outright panic: "Volkswagen gave me the order to cause Gotze plant at Burscheid to develop piston

packings which are so tight that you cannot think of anything tighter."

This has a chemical background: unleaded cat. gasoline contains high quantities of MTBE (methyl-tert-butyl ether), which is necessary as an anti-knock substance (replacing tetraethyl lead [TEL]). In the meantime, the MTBE content has been increased in order to facilitate a higher specific engine performance. For the same reason, by the way, the benzene share of 5% has remained unchanged and is 'criminally' high. (In the US, this share is 1%.)

Engine oil contains an additive, zinc dithiophosphate [ZDTP], which cannot be dispensed with as it guarantees the longevity of engine oil. "If MTBE and ZDTP interact under heat, obviously something catastrophic is going to happen," Mr K. said.

If MTBE and ZDTP interact, phosphoric ester and similar compounds may be created, which fit into the group of nerve gases (Tabun, Sarin, E-605, etc.). At the end of 1993, I turned to a highly qualified full professor of the Medical School at Hannover concerning this problem. He asserted that, besides phosphoric esters and phosphines, the MTBE-ZDTP reaction could generate

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enols which block vital enzymes more than hydrogen sulphide (H₂S) does, also coming out of the car cat. in huge quantities.

3. Shortly after Mr K.'s visit, Mr v.W. of Hannover, unfortunately also deceased in the meantime, turned to me: "My little son caught a large number of houseflies alive. We held one half of these flies in a net approximately 50 centimetres [approx. 20 inches] behind the exhaust of quite an old car. The flies were rather groggy, but they survived. The other half was held behind a cat. exhaust. All of them were dead after 110 seconds, it being noticeable that they died virtually all at once."

This was Mr v.W.'s description. The occurrence of death "all at once", i.e., without a broader statistical distribution over a certain period of time, is typical of the effects of phosphoric esters and/or enols—that is, of substances that can block the cellular respiratory chains.

4. Since 1986, an assembly foreman or engineer working for Mercedes-Benz in Sindelfingen has contacted me several times by telephone. He reported a sudden introduction of protective measures for the

cat. assembly, and other measures which were supposed to be kept secret according to Mercedes-Benz and which were related to the platinum problems.

In 1991, this gentlemen called me once more: "Doctor, please help us! The exhaust of the cat. gasoline cars (not the cat. diesel cars) releases toxic gas, and this to a very high degree. The problem is especially critical after the car has been driven for about 15,000 kilometres [approx. 9,400 miles], when the gaskets are no longer in peak condition."

About three days after this late evening call, I heard a report on my car radio, according to which Mercedes-Benz had given out a warning concerning the "toxic side-effects" of the catalytic converter technology which could become "important after the car had been driven for about 15,000 kilometres."

As far as I know, diesel fuel does not contain any MTBE, so that the production of nerve gas is not to be expected with a diesel car.

This was about the state of our knowledge concerning the problem associated with nerve gas—except for the enol aspect—until the end of 1992. I had a report on

this topic published in *Townsend Letter for Doctors* in July 1991. Due to the extreme explosiveness of this subject, *TLfD* published my information in the most expedient way. And, of course, all *Raum & Zeit* readers are aware of the problem. No action, however, has been taken by Topfer, the Minister for the Environment, who is responsible—as was the case after 1987 concerning the benzene problem.

In the meantime, the occurrence of CFS has increased in Germany, but life goes on in the same old way. I also believed that everything had been said concerning the subject of catalytic converters and nerve gas—until, in 1993, a cruel discovery was made...

(To be continued in the next issue of
NEXUS...)

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(Reprinted from *Townsend Letter for Doctors*, December 1994)